

JOES VALLEY RESERVOIR



Introduction

Joe's Valley Reservoir is located on the eastern slope of the Wasatch Plateau in the Manti-La Sal Mountains and is a principal component in the Emery County Reclamation Project constructed by the U.S. Bureau of Reclamation.

Storage of irrigation water began on November 3, 1965. It was formed by an impoundment of Cottonwood Creek near the confluence of Lowry Water, Seely Creek, Swasey Creek, and North Dragon Creek by an earth-fill, rockfaced

Characteristics and Morphometry	
Lake elevation (meters / feet)	2,097 / 6,880
Surface area (hectares / acres)	479 / 1,183
Watershed area (hectares / acres)	35,742 / 88,320
Volume (m ³ / acre-feet)	
capacity	8.869 x 10 ⁷ / 71,900
conservation pool	none
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	51.4 / 168.7
mean	13 / 44
Length (km / miles)	5.6 / 3.14
Width (km / miles)	1.52 / .95
Shoreline (km / miles)	15.1 / 9.4

Location	
County	Emery
Longitude / Latitude	111 16 47 / 39 17 30
USGS Map	Joe's Valley Reservoir, 1966
DeLorme's Atlas and Gazetteer™	Page 38, A-1
Cataloging Unit	San Rafael (14060009)

dam. It is located approximately 12 miles west of Orangeville, Utah.

The shoreline is owned primarily by the Manti-La Sal National Forest with some private lands on the southwest shoreline. Reservoir level and downstream releases are controlled by the Emery Water Conservancy District. Public accessibility is basically unrestricted. Reservoir water is currently used for recreation, cold water fishery

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agriculture. No changes are expected in the future.

Recreation

Joe's Valley Reservoir is directly accessible from U-10 near Castle Dale via U-57 on the south or U-29 on the north. Proceed west for approximately 12 miles from Orangeville through Straight Canyon to the reservoir. The reservoir is nestled in a north/south valley with relatively steep terrain on the east and west slopes. It is a beautiful area and generally receives moderately heavy usage with heavy use on holiday weekends.

Fishing is the primary activity, however, boating, camping, swimming, nordic skiing and snowmobiling are also thoroughly enjoyed. Fishing is generally very good with excellent ice fishing in the winter. The reservoir provides fishing for rainbow, cutthroat, splake, brown and lake trout.

Recreational facilities are fairly extensive and there are some commercial facilities (full service marina, general store and restaurant) located at the reservoir. Commercial services provided include: gas, camping equipment, fishing tackle, boats, groceries, and boat storage.



Two camping areas are located at the reservoir. Near the boat ramp is a trailer camping area with 17 sites available. Fire rings, standing grills, tables and vault rest rooms are located outside the parking area with parking for boat trailers in the area. There are no electrical hookups or dump station present, but dump stations are available at Castle Dale. Two campgrounds (46 site and 18 site) are located in one general area on the west side of the reservoir. Single and multiply family units are provided. Fire rings, standing grills, tables, vault toilets, water and asphalt pads are available. Some of the sites are under the MISTIX Reservation System and reservations are recommended on holidays and weekends.

Several fisherman parking areas and rest room facilities are located at convenient places around the

reservoir. In addition there are a significant number of summer homes being developed in the area.

Watershed Description

The reservoir is located in high mountains and plateaus. The reservoir fills the valley floor where the gentle slopes quickly give way to steeper terrain. The reservoir collects water primarily from three major drainage areas into the reservoir.

The watershed high point is 11,282 feet above mean sea level, thereby developing a 30% complex slope to the reservoir. The average decrease in river mile elevation is 5.7% (302 feet per mile).

The soil is of limestone origin and has good permeability and moderately slow erosion and runoff. Soil groupings are found in Appendix III.

The vegetation communities are comprised of pine, aspen, spruce-fir, oak, maple, bitterbrush, mountain mahogany, pinyon-juniper, sage-grass, mahonia and grass-forbes. The watershed receives 20.3 - 63.5 cm (8 - 25 inches) of precipitation annually with a frost-free season of 0 - 100 days at the reservoir.

Land use in the reservoir is primarily multiple use forest lands, used by humans for hunting, recreation and livestock grazing. Summer home development is a major land use of the private areas of the watershed.

Limnological Assessment

The water quality of Joes Valley Reservoir is very good, even though it appears that the reservoir does experience declining dissolved oxygen concentrations in the water column. It is considered to be hard with a hardness concentration of approximately 195 mg/L (CaCO₃). The only parameter that has exceeded State water quality standards for defined beneficial uses is dissolved oxygen. The average concentration of total phosphorus in the water column throughout the study period is less than or equal to 10 ug/L. These concentrations are well below the recommended pollution indicator for phosphorus of 25 ug/L. As depicted in the August 28, 1991 profile the dissolved oxygen concentrations in late summer substantiate the fact that water quality impairments do exist. The reservoir does stratify as indicated by the profile and there is a rapid decline in dissolved oxygen concentrations downward in the water column. Below 10 meters conditions do not support a viable fishery. Data from all of the study periods support the fact that the Reservoir is to be an oligotrophic system with low productivity. The system is currently a phosphorus limited system.

The DWR stocks the reservoir annually with catchable albino trout (*Oncorhynchus mykiss*) and fingerling rainbow (*Oncorhynchus mykiss*) and splake trout (*Salvelinus fontinalis* X *Salvelinus fontinalis*).

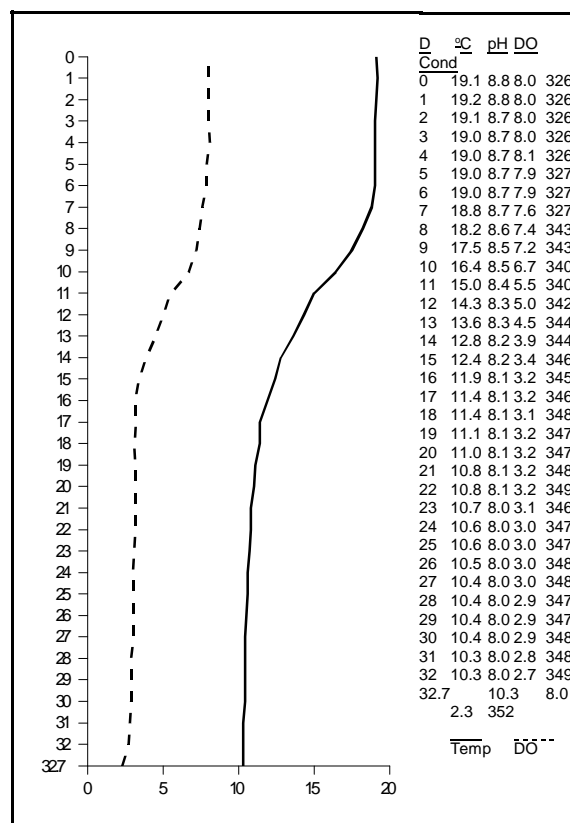
LAKE REPORTS

Limnological Data			
Data averaged from STORET sites: 493104, 493105, 493106, 493107			
Surface Data	1979*	1989	1991
Trophic Status	O	O	O
Chlorophyll TSI	39.43	30.46	27.14
Secchi Depth TSI	22.50	32.20	44.06
Phosphorous TSI	47.35	29.89	32.44
Average TSI	36.43	30.85	34.55
Chlorophyll \bar{a} (ug/L)	-	1.5	1.05
Transparency (m)	13.5	6.3	3.0
Total Phosphorous (ug/L)	10	5	9
pH	8.3	8.5	8.6
Total Susp. Solids (mg/L)	<5	-	<3
Total Volatile Solids (mg/L)	-	-	1
Total Residual Solids (mg/L)	-	-	<2
Temperature (°C / °f)	15/59	17/63	16/60
Conductivity (umhos.cm)	294	368	365
Water Column Data			
Ammonia (mg/L)	0.05	0.02	0.06
Nitrate/Nitrite (mg/L)	0.14	0.15	0.06
Hardness (mg/L)	191	-	198
Alkalinity (mg/L)	188	-	189
Silica (mg/L)	3.8	-	4.1
Total Phosphorous (ug/L)	10	7	7
Miscellaneous Data			
Limiting Nutrient	P	P	P
DO (Mg/l) at 75% depth	3.9	4.6	3.0
Stratification (m)	16-17	NO	9-11
Depth at Deepest Site (m)	38	34	32.7
* Data summarized from only 2 sites.			

In addition largemouth bass (*Micropterus salmoides*) were stocked in the reservoir at one time. The reservoir has never been chemically treated in by the DWR to control rough fish competition, so populations of indigenous fish may be present in the reservoir. Data obtained from surveys conducted by DWR in 1976-77 indicate that the principal algal taxa inhabiting the reservoir were *Microcystis*, *Chroomonas*, *Carteria*, *Cryptomonas*, *Cyclotella*, and *Dinobryon*. The reservoir zooplankton community is composed chiefly of *Daphnia*, *Bosmina*, Cyclopoid copepods, and rotifers. The principal benthos present are *Chironomida* larvae, oligochaetes, and ostracods.

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm ³ /liter)	% Density By Volume
<i>Fragilaria crotonensis</i>	0.229	48.81
<i>Aphanizomenon flos-aqua</i>	0.211	45.02
Pennate diatoms	0.010	2.13



Centric diatoms	0.009	2.01
<i>Asterionella formosa</i>	0.009	2.01

Total .468

Shannon-Weaver [H']	0.95
Species Evenness	0.59
Species Richness	0.20

The flora is fairly typical, but not particularly diverse. The dominance of diatoms and blue-green algae indicates that the lake is reasonably healthy.

Pollution Assessment

Nonpoint pollution sources are: grazing, recreation and development.

There are no point pollution sources in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: recreational bathing (swimming) (2A), boating and similar recreation (excluding swimming) (2B), cold water game fish and aquatic life (3A) and agricultural uses (4).

Information**Management Agencies**

Manti-La Sal National Forest	637-2817
Ferron Ranger District	384-2372
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

Recreation

Castle Dale Chamber of Commerce	381-2547
Six County Commissioners Association	896-9222

Reservoir Administrators

Emery Water Conservancy District